

**APPLICATION UNDER UNITED STATES PATENT LAWS**

Invention: **LOCALIZED BROADCAST INFORMATION BASED ON  
CALL RELATED INFORMATION**

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This is a:

- ☐ [ ] Provisional Application
- ☒ [X] Regular Utility Application
- ☐ [ ] Continuing Application
- ☐ [ ] PCT National Phase Application
- ☐ [ ] Design Application
- ☐ [ ] Reissue Application
- ☐ [ ] Plant Application

**SPECIFICATION**

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# LOCALIZED BROADCAST INFORMATION BASED ON CALL RELATED INFORMATION

## BACKGROUND OF THE INVENTION

### 5 1. Field of the Invention

This invention relates generally to an apparatus and method for accessing highly localized weather broadcasts by a calling party on a telephone line. More particularly, it relates to an apparatus and method for accessing localized weather broadcasts pertinent to the caller based  
10 on call related information, e.g., Caller ID information relating to the calling party.

### 2. Background of Related Art

In many communities, people can access an audibly-played  
15 weather broadcast on their telephone by dialing a specific telephone number. Typically, every community has a specific weather broadcast telephone number which must be dialed to access the localized weather broadcast. Depending on which localized weather broadcast the calling party desires to access, the calling party must know the specific weather  
20 broadcast telephone number for the desired particular localized area prior to actually dialing the telephone number. Typically, to reduce long distance charges and/or to encourage use, localized weather broadcasts are located close to the calling area of the users. However, this tends to significantly increase costs associated with such a weather service, and  
25 also tends to enlarge the regions specifically covered by any one weather forecast.

Fig. 7 illustrates a conventional telephone system capable of accessing an audibly-played localized weather broadcast.

In Fig. 7, a telephone 10 is connected to a telephone  
30 company central office 14 via a telephone line 16. A telephone line

interface (TLI) 12 in the telephone 10 provides the conventional isolation, DC and AC impedance as required by telephone company standards. The telephone line interface 12 is connected to a handset 24 which the user utilizes to listen to the desired weather forecast based on the particular dialed telephone number.

To access and receive an audibly-played specific weather broadcast for a first location, the user dials a specific telephone number for that desired community, which is typically established as a local call to the user. Upon dialing of the specific telephone number, the telephone 10 is connected by an established telephone call to the audibly played weather broadcast specifically assigned to that region or location. Once connected, the specific weather broadcast for the called location 19 is then audibly played for the user.

If the user wants to access and receive an audibly-played specific weather broadcast for a second location, or if a weather service desires to support additional communities, additional telephone numbers or mailboxes must be established for each separate weather forecast. Thus, users in the other locations, or those desiring weather information for a second location, must call a different telephone number or mailbox to access a weather forecast specific to a second location 21.

Thus, upon dialing of a specific telephone number, the telephone 10 may be connected through the telephone line 16 to the central office 14 and to the desired weather broadcast 19 or 21, to gain access to the audibly played weather forecast for the user.

Accordingly, there exists a need for an apparatus and method which allows a user to access weather forecasts which are more highly focused on the particular area from which the caller is calling, without increasing costs over conventional techniques.

## SUMMARY OF THE INVENTION

In accordance with the principles of the present invention, a server is adapted to provide highly localized broadcast information to a plurality of localities. The server comprises a processor, a call related information/broadcast information stream lookup table accessible by the processor and associating call related information entries with respective broadcast information streams, and a plurality of stored broadcast information streams. The processor is adapted to identify a specific one of the plurality of stored broadcast information streams for downloading to a caller based on call related information received with respect to an incoming call.

A customer premises equipment for receiving a highly localized broadcast information stream in accordance with another aspect of the present invention comprises a telephone line interface. A voice recorder/playback module is adapted to store a broadcast information stream downloaded through a telephone switching system. The broadcast information stream is selected based on call related information received with respect to a call from the customer premises equipment. Broadcast information memory is adapted to store the broadcast information stream. A dialer and record module is adapted to dial a telephone number of a source of the broadcast information stream, and to facilitate storage of the broadcast information stream in the broadcast information memory.

A method of selecting a highly localized broadcast information stream in accordance with yet another aspect of the present invention comprises receiving call related information relating to a calling party. A desired one of a plurality of broadcast information streams is determined for downloading to the calling party based on the call related information. The desired one of the plurality of broadcast information streams is downloaded to the calling party.

## BRIEF DESCRIPTION OF THE DRAWINGS

Features and advantages of the present invention will become apparent to those skilled in the art from the following description  
5 with reference to the drawings, in which:

Fig. 1 is a block diagram illustrating an apparatus capable of audibly receiving a highly specific audibly-played weather broadcast determined from a comparison of call related information received with respect to the caller to a look-up table which associates the call related  
10 information (e.g., Caller ID information) with a designated weather forecast for that calling area, in accordance with the principles of the present invention.

Fig. 2 is a table illustrating exemplary contents of a call related information/weather forecast look-up table, e.g., as shown in Fig.  
15 1.

Fig. 3 is a flow chart illustrating an exemplary process by which a user accesses the call related information/weather forecast look-up table and receives a highly localized and specific weather forecast over the telephone line, in accordance with the principles of the present  
20 invention.

Fig. 4 is a block diagram illustrating another embodiment of the present invention capable of audibly receiving a download of a highly localized weather forecast for later playback based on a lookup of call related information received by the weather forecast service with respect  
25 to the calling party.

Fig. 5 is a block diagram illustrating yet another embodiment of the present invention capable of digitally downloading a highly localized weather forecast for later playback based on a lookup of call related information received by the weather forecast service with respect to the  
30 calling party.

Fig. 6 is a block diagram illustrating communication using the Internet for digitally downloading a highly localized weather forecast from an appropriate IP server based on call related information packetized by the central office and transmitted to the IP server of the weather service, in accordance with the principles of the present invention.

Fig. 7 illustrates a conventional telephone system utilized to establish a telephone call with any appropriate one of a plurality of separate audible recordings regarding generalized weather forecasts for large regions.

#### DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

The present invention provides a method and apparatus for accessing a highly localized weather broadcast selected based on the reception by a weather forecast service of call related information (e.g., Caller ID information) relating to an incoming call. The appropriate, highly localized forecast is downloaded to the caller based on, e.g., the area code and/or exchange number of the caller. This allows the provision of a highly localized weather broadcast system which is capable of invisibly selecting and downloading a highly specific weather forecast to a resolution at least down to the locality of a particular exchange in a particular area code.

While potentially requiring the maintenance and updating of a large number of weather forecasts, increased hardware and system costs are minimal particularly because the weather forecasts for all locations can be co-located and all accessed via a common telephone number. Thus, a calling party need only dial one telephone number from any location, yet receive a highly customized weather forecast particular to the region in which the area code (and exchange) of the caller are located.

The highly localized weather forecasts may be accessed real-time or off-line. In particular, real-time access to the highly localized weather forecasts may be obtained for immediate, audible play based on call related information (e.g., Caller ID information) by simply dialing a predetermined access telephone number. To further increase usage of the weather service from a large area, even though the weather forecasts are accessed from a common location, a toll-free telephone number may be established for the common telephone number.

Alternatively, or additionally, the weather forecasts may be obtained by customer premises equipment having message storage capability, e.g., a voice messaging system, by downloading the highly localized weather forecast during off periods of the customer premises equipment, e.g., in the middle of the night, for later playback by the user, e.g., first thing in the morning. This would provide immediate weather information to the user which is highly particular to the location of the user's household or business.

The downloaded, highly localized weather forecast may be downloaded using analog techniques wherein the customer premises equipment either plays the weather forecast as it is received, or digitizes and stores the downloaded weather forecast. Alternatively, using a modem both at the customer premises equipment and at the called weather service, the highly localized weather forecast may be downloaded digitally from a server at the weather service and stored for later playback at the user's voice messaging system. In either case, in accordance with the principles of the present invention, the digitally downloaded weather forecast will be highly localized by association with information (e.g., an area code and/or exchange number) contained in the call related information received by the weather service relating to the incoming call.

Fig. 1 is a block diagram illustrating an apparatus capable of audibly receiving a highly specific audibly-played weather broadcast determined from a comparison of call related information received with respect to the caller to a look-up table which associates the call related information (e.g., Caller ID information) with a designated weather forecast for that calling area, in accordance with the principles of the present invention.

In particular, a common telephone 10 or other customer premises equipment including a telephone line interface 12 and a handset or other communication device (e.g., speaker and microphone) dials a particular telephone number of a weather forecast server 100. A central office 14 routes the call from the telephone 10 through the public switched telephone network (PSTN) 700 to the weather forecast server 100.

The weather forecast server 100 in the disclosed embodiment includes an appropriate telephone line interface 104 for receiving the in-band telephone call from the central office 14. Of course, the principles of the present invention relate equally to out-of-band signaling or communication between the central office 14 and the weather forecast server 100.

In the disclosed embodiments, it is presumed that the weather forecast server 100 receives call related information, e.g., Caller ID information such as a telephone number of a calling party, with incoming calls.

The weather forecast service further includes a call related information (e.g., Caller ID)/weather forecast lookup table 22, a plurality of stored weather forecasts 20, and an audio player 18.

The Caller ID/weather forecast lookup table 22 includes at least one entry associating a particular portion of a telephone number, e.g., an area code and/or an exchange number, to a particular updated weather forecast stored in the stored weather forecasts storage element



20. For instance, Fig. 2 depicts the contents of three exemplary entries **281-283** stored in the Caller ID/weather forecast lookup table or database **22** shown in Fig. 1.

Each entry **281-283** includes an association of an area code **271** and an exchange number **272** to an appropriately indexed current weather forecast **273** for that particular calling area. The appropriately indexed current weather forecasts **273** are stored in the stored weather forecast storage element **20**.

Preferably, the stored weather forecast storage element **20** is non-volatile memory, but can be volatile memory within the principles of the present invention. Moreover, while the present invention is disclosed with respect to highly localized weather forecasts stored digitally in an appropriate stored weather forecast storage element **20**, the principles of the present invention relate equally to the analog storage (e.g., repeating cassette tape or similar device) of the highly localized weather forecasts.

Referring back to Fig. 1, in response to a telephone call from a caller, the controller **102** compares received call related information (e.g., an area code and/or an exchange number) with each of the entries **281-283** in the Caller ID/weather forecast lookup table **22** (Fig. 1). If a match is made, the controller **102** obtains the appropriately indexed highly localized weather forecast from the stored weather forecasts storage device **20** if digitally stored, or triggers an analog playback of an analog stored weather forecast from the stored weather forecasts storage element **20**. In either case, an audio player **18** performs a digital to analog conversion in the case of digitally stored weather forecasts, and inserts the audibly-played weather forecast into the telephone line interface **104** so that the caller at the telephone **10** will hear the same.

Accordingly, a caller from any location within a large expanse, e.g., from anywhere in the country, can call a common telephone number (e.g., a toll-free telephone number) and receive a

highly localized and specific weather forecast determined based on call related information (e.g., an area code and/or exchange number) of the caller's telephone. The comparison of call related information to available weather forecasts by the weather forecast server **100** is preferably  
 5 performed invisibly to the caller, providing the automatic convenience of a very specific weather forecast from any area in the country simply by dialing a telephone number.

Fig. 3 is a flow chart illustrating an exemplary process by which a user accesses the call related information/weather forecast look-  
 10 up table and receives a highly localized and specific weather forecast over the telephone line, in accordance with the principles of the present invention.

In particular, in step **402**, a calling party desiring a weather forecast for their particular calling area (with a resolution as small as an  
 15 area serviced by one exchange number within one area code) calls a common telephone number from wherever they are in the serviced region.

In step **404**, the weather forecast server **100** determines the calling party's telephone's location based on call related information received from the central office **14**, e.g., the area code and exchange  
 20 number of the calling party.

In step **406**, the index of a particular highly localized weather forecast is determined by the controller **102** (Fig. 1) from a comparison of the received call related information to each of the entries in the Caller ID/weather forecast lookup table **22** until a match is found.

25 In step **408**, the matched highly localized weather forecast for the particular calling area of the calling party is retrieved from the stored weather forecast storage device **20** and audibly played over the telephone line.

In step **410**, the telephone call is terminated, either by the weather forecast server **100**, the calling telephone **10**, and/or the central office **14**.

Fig. 4 is a block diagram illustrating another embodiment of the present invention capable of audibly receiving a download of a highly localized weather forecast for later playback based on a lookup of call related information received by the weather forecast service with respect to the calling party.

In particular, the customer premises equipment **495** comprises a voice messaging system, e.g., a telephone answering device. The telephone answering device **495** includes a controller **306**, an alphanumeric keypad **302**, and a display **304**.

The controller **306** controls the overall functionality of the telephone answering device **495**, and may be any suitable processor, e.g., microprocessor, microcontroller, or digital signal processor (DSP). The alphanumeric keypad **302** allows a user to dial a telephone number, and a display **304** is utilized to provide the user with conventional answering machine information, e.g., the number of messages stored, etc.

The telephone answering device **495** also includes an appropriate telephone line interface **322** to provide the conventional DC and AC impedance to the central office **14**.

A voice recorder/playback module **316**, microphone **318**, speaker **320**, and message storage memory **314** provide otherwise conventional voice messaging recording and playback functions.

In accordance with the principles of the present invention, the telephone answering device **495** further includes an off-line automatic telephone number dialer and record control module **308**. Its function is to automatically dial the common telephone number for accessing the weather forecast server **100** (preferably when the telephone answering device **495** is off-line, such as in the middle of the night, or just before

sunrise). The off-line automatic telephone number dialer and record control module 308 is preferably located within the program code of the controller 306, but may be external to the controller 306, in accordance with the principles of the present invention.

5           When a downloaded signal, e.g., an analog audio signal is detected being played over the telephone line from the weather forecast server 100, the off-line automatic dialer and record control module 308 will activate the voice recorder/playback module 316 to record the audibly downloaded weather forecast. Preferably, the audibly downloaded and  
10 locally recorded weather forecast will be stored in a portion of the voice message memory 314, e.g., in a weather forecast memory portion 312. Preferably, the voice message memory 314 is non-volatile memory, e.g., Flash memory.

          Upon detection of the termination of the telephone call, the  
15 voice recorder/playback module 316 will terminate the recordal and storage of the weather forecast.

          At any time after the highly localized weather forecast is stored in the weather forecast memory 312, the user can listen to the weather forecast by appropriately instructing the telephone answering  
20 device 495, e.g., by depressing a dedicated button (not shown).

          Thus, as shown in Fig. 4, a highly localized weather forecast can be downloaded in audible, analog form, and either played as it is received, or can be digitized and stored for later playback. However, the present invention also applies to the digital downloading of the weather  
25 forecast information, for storage and/or playback at a user's voice messaging system.

          For instance, Fig. 5 is a block diagram illustrating yet another embodiment of the present invention capable of digitally downloading a highly localized weather forecast for later playback based

on a lookup of call related information received by the weather forecast service with respect to the calling party.

In particular, a modem **582** is added to the telephone answering device otherwise shown in Fig. 4, and a modem **503** is added to the weather forecast server **500**, to allow digital communication over a telephone line to the central office **14**. Moreover, at the weather service, an audio player is not necessary for digital downloading of the appropriate, highly localized weather forecast. Thus, when an appropriate, highly localized weather forecast is retrieved from the stored weather forecast storage device **20** by the controller **502** of the weather forecast server **500**, the digital information can be directed to be stored in the weather forecast memory **312** of the telephone answering device **595** shown in Fig. 5 for later playback by the user.

Fig. 6 is a block diagram illustrating that the highly localized weather forecasts need not be limited to communication over the PSTN only. For instance, the weather forecasts can be downloaded over the Internet as shown in Fig. 6.

In this case, the weather forecast server **30** is an Internet Protocol (IP) server **30** which is in communication with the stored weather forecast storage device **20** and a call related information/weather forecast lookup table **22a**. The central office **14** communicates with the Internet **28** via its own IP server **26**.

The call related information, while being an area code and exchange number in the disclosed embodiment, need not be, particularly when the call related information is digitally transmitted out of band as in the case of the Internet.

Thus, in accordance with the principles of the present invention, a calling party is provided with invisible, automatic access to a highly localized and specific weather forecast simply by dialing a common

telephone number from anywhere over a large region, and potentially from anywhere in the country.

The present invention, although described with respect to weather forecast information, is applicable to the dissemination of any  
5 information which is calling area specific or calling party specific and available by calling a common telephone number.

While the invention has been described with reference to the exemplary embodiments thereof, those skilled in the art will be able to make various modifications to the described embodiments of the invention  
10 without departing from the true spirit and scope of the invention.